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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ANDREAS BACHER, KARL-ERNST FICKERT,  
THEO MAYER and KURT STARK

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Appeal 2009-015225  
Application 10/618,936  
Technology Center 1700

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Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and  
CHUNG K. PAK, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

This is an appeal from the final rejection of claims 1, 4-7, 10-17, and 21-23. We consider Appellants' omission of claim 16 in the statement of the rejected claims to be an inadvertent oversight. We have jurisdiction under 35 U.S.C. § 6(b).

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Claim 1 is illustrative:

1. A silane-containing polyvinyl alcohol polymer consisting essentially of a completely hydrolyzed or partially hydrolyzed vinyl ester copolymer having a degree of hydrolysis of from 75 to 100 mol%, obtained by free radical polymerization of

- a) vinyl acetate and from 1 to 30 mol%, based on total polymer, of 1-methylvinyl acetate, and;
- b) from 0.01 to 1 mol% of one or more silane-containing, ethylenically unsaturated monomers, and
- c) hydrolysis of the polymers obtained thereby,

wherein the silane-containing, ethylenically unsaturated monomers is selected from the group consisting of ethylenically unsaturated silicon compounds of the general formula  $R^1SiR_{2-3}^2(OR^3)_1$ , in which each  $R^1$  is independently  $CH_2=CR^4-(CH_2)_{b-1}$  or  $CH_2=CR^4CO_2(CH_2)_{1-3}$ , each  $R^2$  independently is a  $C_{1-3}$ -alkyl radical,  $C_{1-3}$ -alkoxy radical, or halogen, each  $R^3$  independently is an optionally branched, optionally substituted  $C_{1-12}$  alkyl radical or a  $C_{2-12}$  acyl radical optionally interrupted by an ether group, and each  $R^4$  is independently H or  $CH_3$ , a (meth)acrylamide containing silane groups of the formula  $CH_2=CR^5-CO-NR^6-R^7-SiR_m^8-(R^8)_{3-m}$ , in which  $m = 0$  to 2, each  $R^5$  is independently H or a methyl group, each  $R^6$  is independently H or a  $C_{1-5}$  alkyl group, each  $R^7$  is independently a  $C_{1-5}$  alkylene group or a bivalent organic group in which the carbon chain is interrupted by an O or N atom, each  $R^8$  is independently a  $C_{1-5}$  alkyl group, and each  $R^9$  is independently a  $C_{1-40}$  alkoxy group optionally containing further heteroatoms selected from the group consisting of O, N, S, or P, and mixtures thereof.

The Examiner relies upon the following references as evidence of obviousness (Ans. 3):

Maruyama	4,617,239	Oct. 14, 1986
Schilling	4,879,336	Nov. 07, 1989

This is the second time the present application is before this Board. In a decision dated February 27, 2007, the Board affirmed the Examiner's rejection under 35 U.S.C. § 103(a) over the same prior art applied in this appeal (Appeal No. 2007-0618). Independent claim 1 of the instant appeal is somewhat narrower in scope than claim 1 in the prior appeal, e.g., the amount of silane-containing, ethylenically unsaturated monomer is 0.01 to 1 mol %, rather than 0.01 to 10 mol %. Also, Appellants now rely upon the Declaration of Dr. Andreas Bacher, one of the present inventors.

We have thoroughly reviewed each of Appellants' arguments for patentability, as well as the Declaration evidence relied upon in support thereof. However, we agree with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103, in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection for the reasons set forth in the Answer and those articulated in the prior Board decision, and we add the following primarily for emphasis.

Appealed claims 1, 4-7, 10-17, and 21-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schilling in view of Maruyama.

There is no dispute that both Schilling and Maruyama, like Appellants, are directed to copolymers of polyvinyl alcohol which are useful as binders in coating slips, i.e., coatings that are applied to paper to produce

a smooth, ink-receptive surface. Schilling, like Appellants, discloses a copolymer comprising vinyl alcohol units and 1-alkylvinyl alcohol units as well as “other polymerizable monomers” (col. 2, ll. 35-48). As recognized by the Examiner, Schilling does not expressly teach that one of the other polymerizable monomers may be the presently claimed silane-containing monomer. However, Maruyama discloses a copolymer similar in structure to Schilling’s copolymer which also comprises the presently claimed silane-containing monomer. Maruyama teaches that the silicon atom of the copolymer reacts with the cellulose fibers and pigments of the paper to improve its surface properties, such as strength, printability and barrier properties (col. 9, ll. 8-26). Accordingly, we agree with the Examiner that one of ordinary skill in the art would have found it obvious to select Appellants’ silane-containing monomers for the other monomer of Schilling with the reasonable expectation of improving the surface properties taught by Maruyama. Appellants have presented no argument that convinces us that the decision in the prior appeal was in error.

Appellants submit that Maruyama alludes to solution instability resulting from siloxane bonds, pointing to the disclosure at column 8, lines 23 through 25. However, the reference teaches that an alkaline aqueous solution is preferable for the stability of solution viscosity, and Appellants have not explained why it would have been non-obvious for one of ordinary skill in the art to use the modified copolymer of Schilling in the form of an alkaline aqueous solution. Also, Appellants have not explained why it would not have been obvious for one of ordinary skill in the art to achieve the advantages taught by Maruyama at the expense of some level of instability.

Appellants also maintain that because the Maruyama polymers do not exhibit dissolution problems nor pigment shock there would be no benefit in incorporating the 1-alkylvinyl alcohol comonomer into the Maruyama polymer. However, this argument misses the thrust of the Examiner's rejection. As pointed out by the Examiner, the conclusion of obviousness is based upon modifying the Schilling polymer, not the Maruyama polymer.

Turning to the Bacher Declaration, we concur with the Examiner that Appellants have not shouldered their burden of demonstrating unexpected results. *In re Klosak*, 455 F2d. 1077, 1080 (CCPA 1972). Like the Specification evidence reviewed in the prior decision, the Declaration evidence is hardly commensurate in scope with the degree of protection sought by the appealed claims. As pointed out by the Examiner, Examples 1 and 2 according to the present invention show results for only two silanes, namely, vinyltriethoxysilane and vinylmethyldiethoxysilane. On the other hand, independent claim 1 encompasses an untold number of silane-containing, ethylenically unsaturated monomers, including those comprising heteroatoms, such as O and N. Appellants have presented no convincing rationale for why the limited showing in the Declaration would reasonably be expected to translate to the myriad of silane-containing monomers embraced by the appealed claims.

Also, we agree with the Examiner that the exemplified amount of silane-containing monomer, 0.33 mole %, is not reasonably commensurate in scope with the lower and upper regions of the claimed range, 0.01 and 1 mol %. Again, Appellants have not explained why much lesser and greater amounts of silane-containing monomers would be expected to yield the same or similar results.

We also concur with the Examiner that the Declaration does not set forth a comparison with the closest prior art. While the comparative example of the Declaration uses “a Maruyama-type silane-modified polyvinyl alcohol” (Decl., para. 6), Appellants have not presented a comparison with exemplified polyvinyl alcohols of Maruyama, nor have they established that the “type” of polyvinyl alcohol used in the comparison is sufficiently like the polyvinyl alcohols exemplified by Maruyama such that it would be expected to have essentially the same properties.

The Declarant states that “the use of isopropenyl acetate also involves a considerable cost penalty [and] [u]nless faced with some reason for its use, one skilled in the art would not employ isopropenyl acetate” (para. 5). The Declarant further states that “[t]he Maruyama copolymers are not known in the industry to exhibit marked pigment shock as are polyvinyl alcohols” (para. 6). Based on the context of the Declaration, we understand the Declarant’s position to be that one of ordinary skill in the art would not have modified the polymer of Maruyama by incorporating the isopropenyl acetate of Schilling (*see* para. 6, last para., and para. 7). However, as noted above, the Examiner’s rejection is based upon modifying Schilling’s copolymer by incorporating a silane-containing, ethylenically unsaturated monomer, and not modifying the polymer of Maruyama.

The Declarant also states that “[i]f Schilling, for example, were motivated to employ a silane-functional comonomer, there would be no reason apparent to Schilling, or more generally to anyone skilled in the art, to also employ isopropenyl acetate as a comonomer” (para. 7). However, the Declarant does not explain why one of ordinary skill in the art would not employ isopropenyl acetate as an optical brightener support and ensure

minimized pigment shock while incorporating the silane-containing monomer to obtain the improved surface properties.

Furthermore, while Appellants maintain that there would have been no reason for one of ordinary skill in the art to modify the Schilling's polymer with a silane-containing monomer, and that "Dr. Bacher nevertheless investigated polyvinylalcohol copolymers containing both silane and 1-methylvinyl acetate comonomers" (App. Br. 13, third para.), Appellants have not set forth what one of ordinary skill in the art would have expected by modifying the Schillings polymer with the presently claimed silane-containing monomers.

In conclusion, based on the foregoing, it is our judgment that the evidence of obviousness presented by the Examiner outweighs the evidence of non-obviousness proffered by Appellants. Accordingly, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (2008).

**AFFIRMED**

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